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- (71) Applicant (for all designated States except US): **QINETIQ LIMITED** [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1E 6PD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **DAVIES, Jonathan, James** [GB/GB]; QinetiQ Limited, Winfrith Technology Centre, Winfrith Newburgh, Dorchester, Dorset DT2 8XJ (GB). **DUNN, Shaun, Michael** [GB/GB]; QinetiQ Limited, Winfrith Technology Centre, Winfrith Newburgh, Dorchester, Dorset DT2 8XJ (GB). **RAPSON, Peter, James** [GB/GB]; QinetiQ Limited, Winfrith Technology Centre, Winfrith Newburgh, Dorchester, Dorset DT2 8XJ (GB). **POINTER, Stephen, Arthur** [GB/GB]; QinetiQ Limited, Winfrith Technology Centre, Winfrith Newburgh, Dorchester, Dorset DT2 8XJ (GB).
- (74) Agent: **IAN, Johnson**; IP QinetiQ Formalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).
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— of inventorship (Rule 4.17(iv)) for US only
- Published:**
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: UNDERWATER LOCATION APPARATUS

(57) Abstract: Measuring apparatus for providing information on the relative location of a target site which is radiating a target signal that includes a predetermined pulse signal, comprises receiver means for providing a pair of temporally spaced output pulses in response to a single received said predetermined pulse signal and cross-correlation means coupled to said receiver means for cross-correlating said pair of output pulses or signals derived therefrom.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/04001

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01S3/808 G01S1/74 G01S3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 336 741 A (FUJITSU LTD) 27 October 1999 (1999-10-27) page 14, line 19 - page 24, line 14; figures 1,3,5	1-4,7, 10-12, 15-23,25
Y	-----	13,14
X	US 5 724 047 A (CLAYTON GARY E ET AL) 3 March 1998 (1998-03-03) column 4, lines 19-67; figure 4	1-4,25
Y	US 6 121 927 A (KALLIOJARVI KARI) 19 September 2000 (2000-09-19) column 4, line 66 - column 6, line 50; figures 1-8	13,14
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
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- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

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Date of mailing of the international search report

26.04.04

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Fanjul Caudevilla, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/04001

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 131 873 A (ANDERSON WILLIAM B) 26 December 1978 (1978-12-26) column 3, line 16 - column 4, line 23; figures 1-3 -----	5,6
A	US 4 800 541 A (FARMER DAVID M ET AL) 24 January 1989 (1989-01-24) column 4, line 9 - column 5, line 42; figures 1-6 -----	10,12, 16-23
A	US 5 570 323 A (PRICHARD D WAYNE ET AL) 29 October 1996 (1996-10-29) abstract; figures 1-7 -----	4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/04001

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-25

Apparatus and method for providing information on the relative location of a target (direction) by cross-correlating the signals provided by two spaced receivers.

2. claims: 26-27

Method of determining range of a target by using Doppler correction derived from the correlation of two temporally spaced pulses sent by said target.

INTERNATIONAL SEARCH REPORT

Patent Application No

PCT/GB 03/04001

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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